

a) ficient itself.





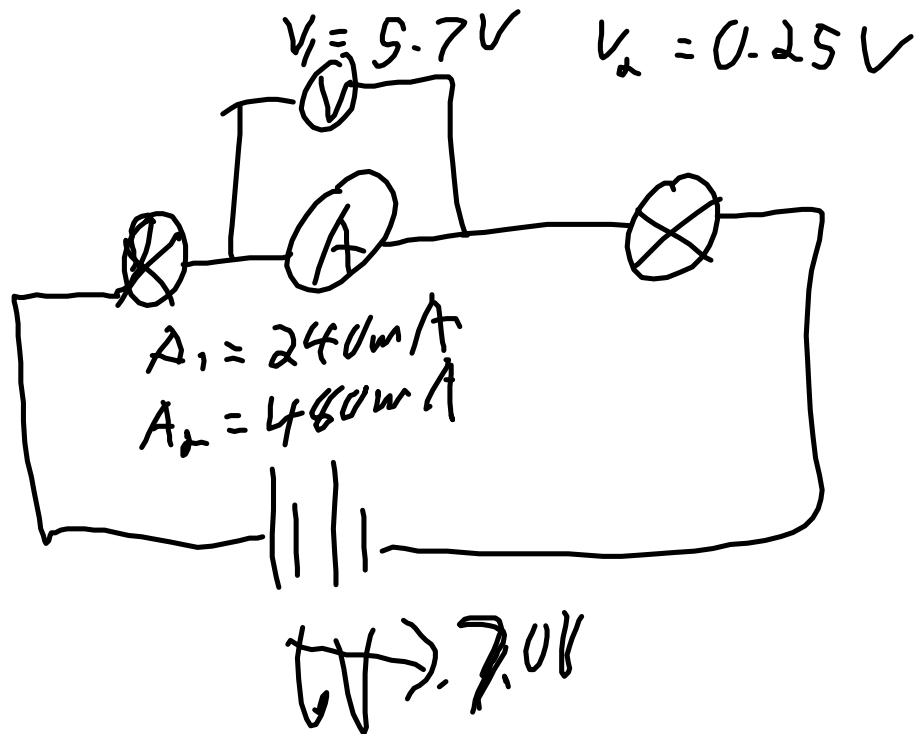


Solve for I

You connect two light bulbs in series to a 6.0V battery and they light up.

You connect an ammeter in series and it reads 100mA but no light. What happened?

How would the brightness change if they are in parallel? Giancoli p500 5,7,13,23,25,27



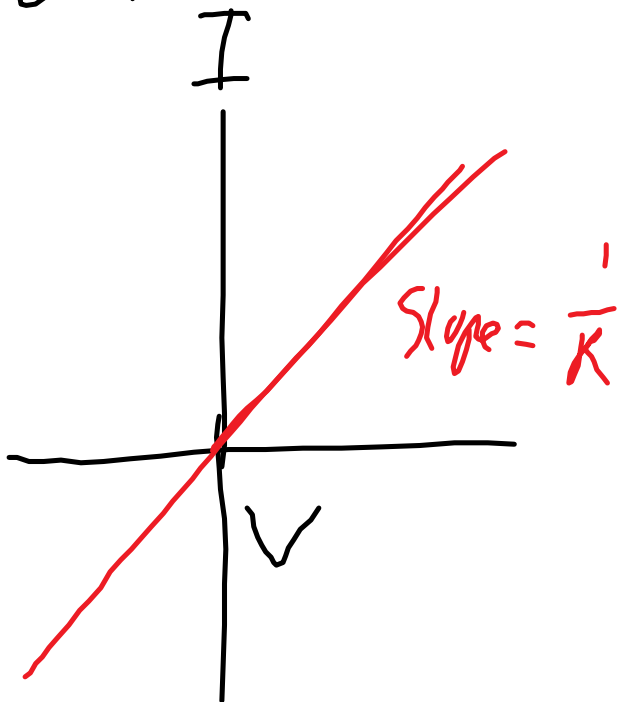
Ideal ammeter has  $R=0$  and ideal voltmeter has  $R=$  infinity

$$R \text{ of ammeter 1} = V/I = 5.7/0.24 = 23.75 \Omega$$

$$R \text{ of ammeter 2} = 0.25/0.24 = 1.0417 \Omega$$

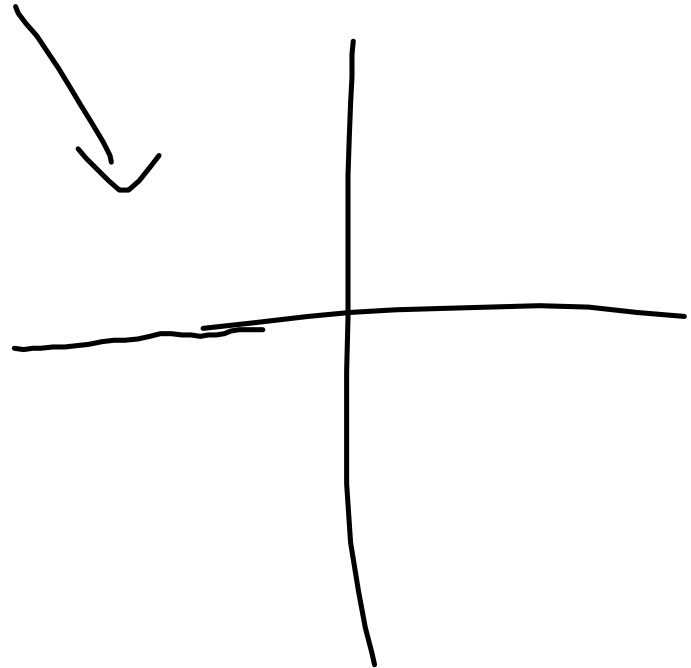
r' l l

Resistor  
Ohmic

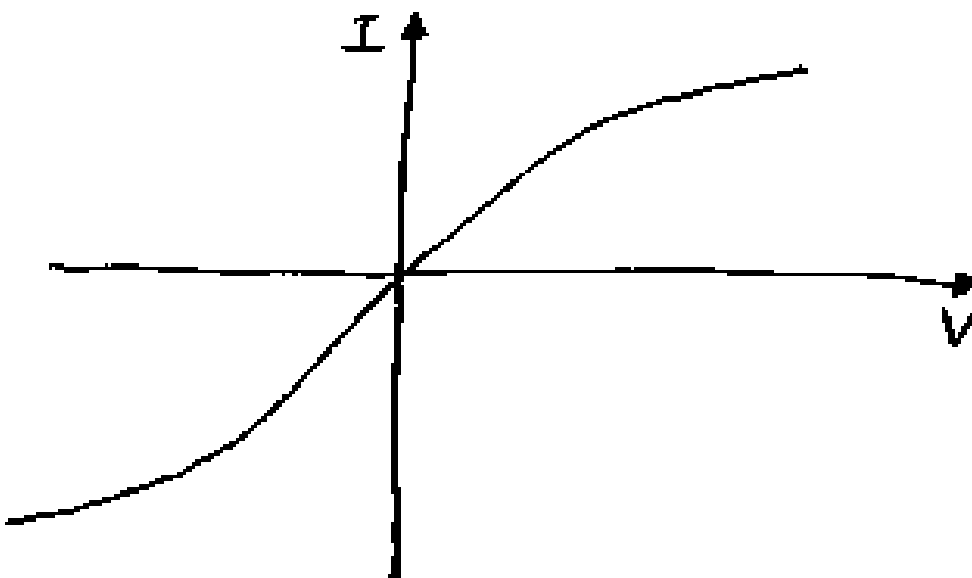


filament  
light  
bulb

diode

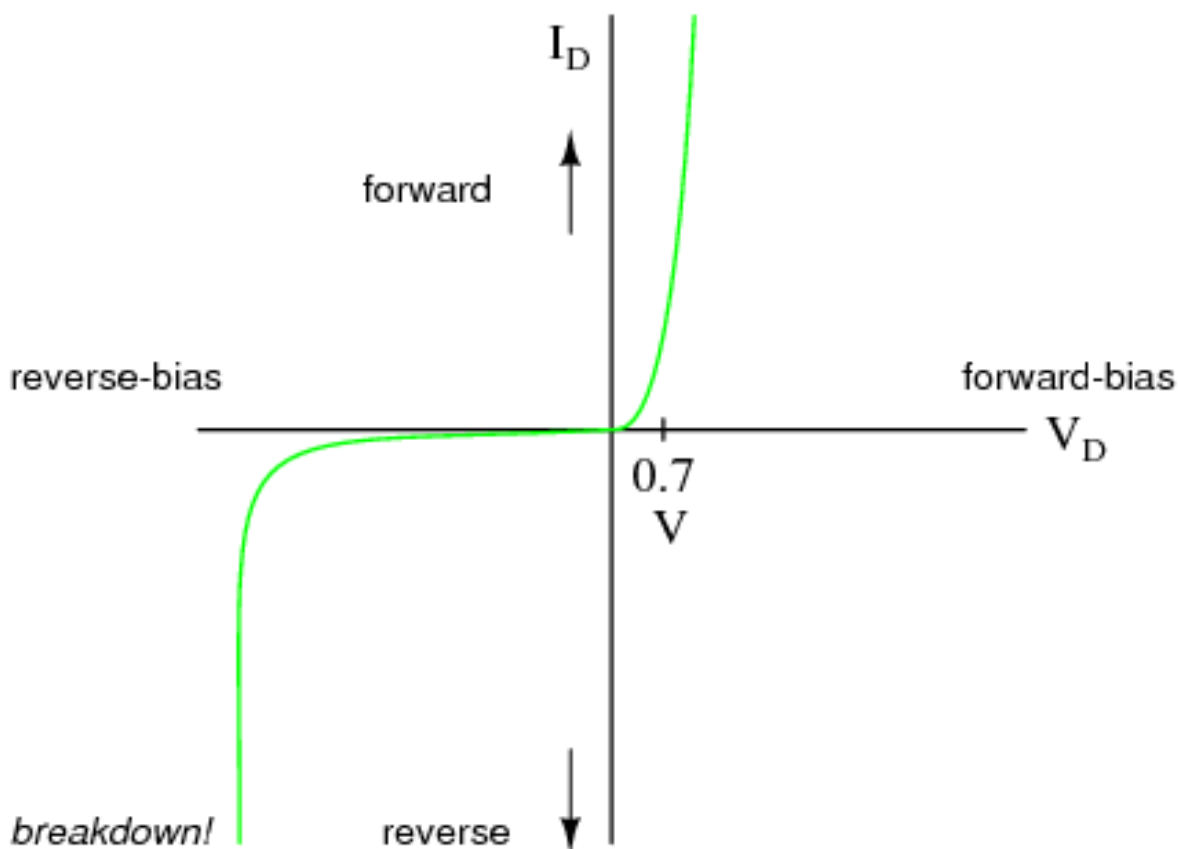


filament lamp



as the filament gets hotter or colder, it dissipates more energy for a set current

# diode



very non-ohmic

eg. you connect a diode to a potentiometer and it just lights up at 0.70V. What is the wavelength of the photon of light emitted? What colour is that?

$$E=hf \quad h = 6.64 \times 10^{-34} \text{ Js}$$

$$E=hc/\lambda$$

How do you build an ammeter/voltmeter?

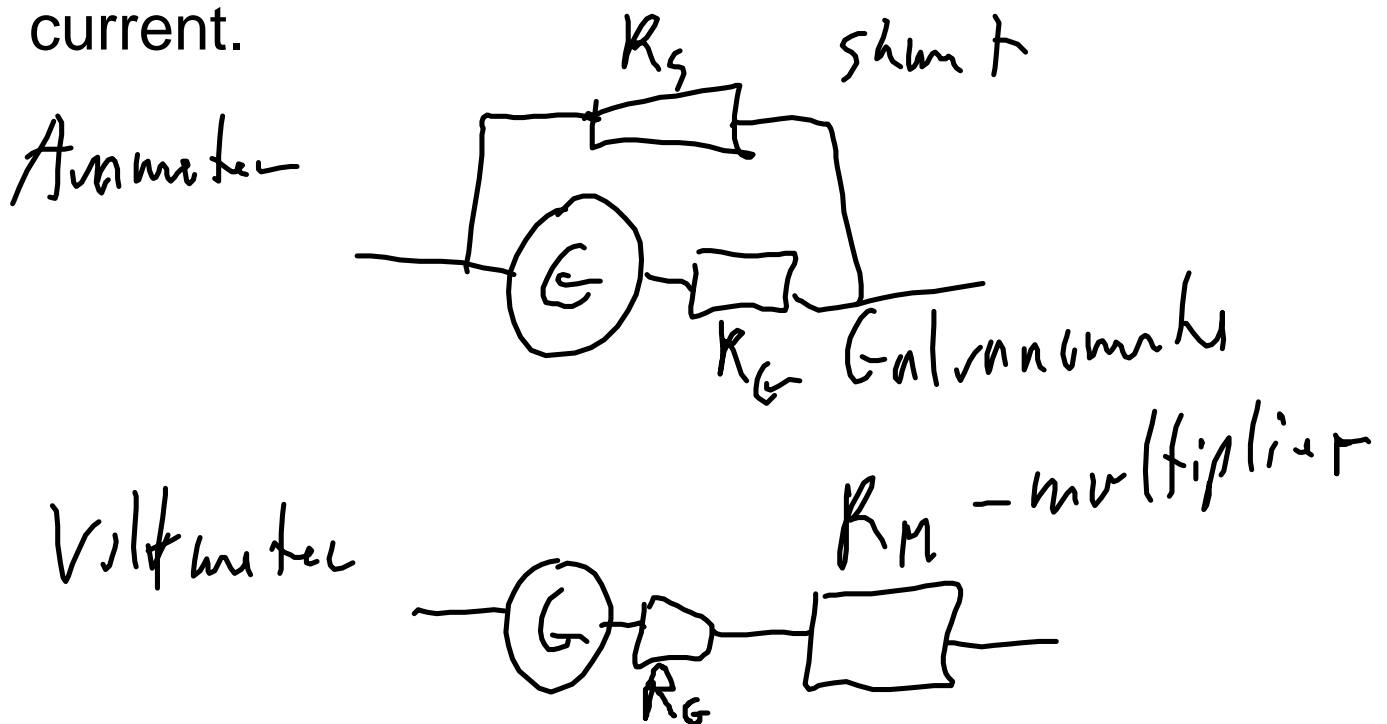
A galvanometer measures really small currents.

You can build it by putting a coil of wire near a magnet. It experiences a force when the current

flows, calibrate the force with a spring and you have a galvanometer. (you can also use semiconductors for that)

How do you build an ammeter:

you need to put a resistor in parallel to the galvanometer to "shunt" the current ie divert the current.



p502 Q51,53,55